

More specifically, when the void ratio of the support is high, (and thus outside the scope of Applicants' claims), some CNT grows from inside the support. Then, when separating this CNT, a part of the support is also peeled off.

On the contrary, in the present invention, the void ratio of the support is set to a low level of **10% or less**, thereby making the CNT to grow on the surface of the support. [As set forth in claim 10, a catalyst may be adhered to the closely packed fine particles.] **Thus, peeling-off of the support is prevented, and the yield of the CNTs are improved.**

The Kim reference merely discloses a relation between the change in **pore size** and gas adsorption. Kim does not provide any teaching or suggest regarding "void ratio", but rather, discloses a manner of controlling the pore size and the surfactant, and focuses mainly on the **pore size** of a pore formed in a particle, the specific surface area, and the like. Kim does not provide any teaching or suggestion regarding the densification of the particle.

Thus, Kim certainly fails to teach or suggest making the void ratio low, in order to (i) make the particle itself closely packed (highly densified), and (ii) to minimize the impurity by preventing the peeling-off at the time of separation of a carbon nanofiber formed on the surface of the closely packed fine particle.

One of ordinary skill in the art would not have been motivated to alter a void ratio of each of the closely packed fine particles to 10% or less, in order to affect the purity of the carbon nanofiber.

On page 4 of the Final Rejection, the Examiner indicates that the problem Applicants were trying to solve is not the sole rationale that can support an obviousness rejection. However, Applicants respectfully assert that absent an understanding of the relationship of void ratio and the purity of the carbon nanofibers, one skilled in the art would not have been motivated to arrive at the **particular void ratio** required by Applicants' claims. Thus, even if one skilled in the art were to "optimize" pore size, (as asserted by the Examiner), they would fail to arrive at the particular limitations required by Applicants' claims.

On page 7 of the Final Rejection, the Examiner states "[o]ptimizing the porosity of a catalyst when it is a known result effective variable does not impart patentability." However, Applicants kindly note that, at the time of the present invention, the relationship of void ratio and the separation of carbon nanofibers was **unknown**. MPEP 2144.05(II)(B) states that, "[a]

particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) ...The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result- effective variable.)” Similarly, the prior art does not recognize that separation of carbon nanofibers, i.e., purity of carbon nanofibers, is a function of the void ratio of the fine particles. Thus, contrary to the Examiner’s general assertion, it would not have been obvious to one of ordinary skill in the art, at the time of the present invention, to optimize the void ratio of the particles to arrive at the ratio required by Applicants’ claims.

It is difficult to theoretically predict the favorable effect of a certain void ratio, and thus, even those of skill in the art would be unable to predict that the carbon nanofibers favorably separate from the surfaces of the closely packed fine particles, **when the void ratio of each of the closely packed fine particles is 10% or less.**

Lastly, Applicants wish to inform the Examiner that JP-A 2003-30096, upon which the present application claims foreign priority, has been patented based on the recited feature that the void ratio is 10% or less (Japanese Patent No. 3913181).

Therefore, in view of the foregoing remarks, as well as the remarks presented in the response filed November 22, 2010, it is submitted that each of the grounds of rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

If, after reviewing Applicants' remarks, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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